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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,507	06/30/2003	Michael E. Badding	SP03-079	2157
22928	7590	11/16/2004	EXAMINER	
CORNING INCORPORATED			WALKER, KEITH D	
SP-TI-3-1				
CORNING, NY 14831			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/611,507

Applicant(s)

BADDING ET AL.

Examiner

Keith Walker

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-9 and 17-22 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-9, drawn to a non-porous and textured electrolyte sheet, classified in class 252, subclass 62.2.
  - II. Claims 10-16, drawn to an electrode/electrolyte assembly, classified in class 429, subclass 33.
  - III. Claims 17-22, drawn to a method of making an electrolyte sheet, classified in class 264, subclass 618.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utilities such as batteries, including but not limited to lithium, zinc, lead acid, and nickel cadmium, and in magnetic recording mediums. See MPEP § 806.05(d).
3. Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case invention I can be made by a range of

processes including sputtering, chemical vapour deposition, electroless plating.

Insufficient evidence exists showing the product of invention I can only be made by the process of invention III.

4. Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case invention II can be made by a range of processes including sputtering, chemical vapour deposition, electroless plating.

Insufficient evidence exists showing the product of invention I can only be made by the process of invention III.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. This application contains claims directed to the following patentably distinct species of the claimed invention: zirconium.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, the electrolyte sheet is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim

is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

7. During a telephone conversation with Svetlana Z. Short on 11/9/2004 a provisional election was made without traverse to prosecute the invention of group II, claims 7-16. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-6 & 17-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. A provisional election of the species Zirconium was made without traverse to prosecute the invention of group II, claims 7-16.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Information Disclosure Statement***

8. The Information Disclosure Statement filed on June 30, 2003 has been placed in the application file and the information referred to therein has been considered as to the merits.

### ***Drawings***

9. Figure 8A is objected to for not showing reference number (105') as referred to in paragraph [0048]. Figure 8A shows two (105) reference numbers. Appropriate correction is required.

10. Figure 11A is objected to for the incorrect line of sight indicator (13B). Examiner expects the number to be (11B), indicating the line of sight as shown in figure 11B. Appropriate correction is required.

### ***Claim Objections***

11. Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 15 talks to an electrode/electrolyte assembly having a sheet thickness variation of at least 2

micrometers. Claim 10 also talks to an electrode/electrolyte assembly having a sheet thickness variation of at least 2 micrometers. Since claim 15 is dependent on claim 10 and both claims speak to the same limiting factor, claim 15 does not further limit the subject matter of claim 10.

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 10-12 & 15-16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by EP 1113518-A1 (Heifinstine).

With respect to claim 10 & 15, Heifinstine discusses an electrolyte sheet with variations in thickness of at least 0.5% the sheet thickness and with an anode layer disposed on the first side and a cathode layer on the opposite side (Col. 11, ll. 1-8). Where the electrolyte layer has a thickness of 20 micrometers (Para. [0033]).

With respect to claim 11, Heifinstine discusses a polymer ceramic sheet containing yttria-stabilized zirconia (Para. [0025]).

With respect to claim 12, Heifinstine discusses an electrolyte layer with a thickness of 20 micrometers (Para. [0033]).

With respect to claim 16, Heifinstine discusses a flexible ceramic electrolyte sheet (Col. 11, ll. 1).

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 13 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1113518-A1 (Heifinstine) in view of US Publication 2001/0044043 (Badding).

The teachings of Heifinstine are discussed above are incorporated herein.

Heifinstine doesn't teach directly to the thickness of the electrolyte layer to be in the range of 4 – 15 micrometers.

Badding teaches the use of thin flexible electrolyte layers having a thickness of less than 30 micrometers and preferable in the range of 5 – 20 micrometers.

The motivation to modify the thickness of the electrolyte is to enhance the thermal shock resistance and electrochemical performance.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Heifinstine with the electrolyte thickness as taught by Bedding, since it would have enhanced the thermal shock resistance and electrochemical performance.

16. Claims 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Publication 2001/0044043 (Badding) in view of EP 1113518-A1 (Heifinstine).



With respect to claims 10 & 12-14, Badding teaches an electrode/electrolyte assembly with a sheet thickness between 5-20 microns (Para. [0042]).

With respect to claims 11 & 16, Badding teaches electrode/electrolyte assembly wherein the electrolyte layer is formed of a flexible polycrystalline ceramic sheet consisting of partially stabilized or stabilized zirconia and is doped with a dopant selected from the group consisting of the oxides of Y, Ce, Ca, Mg, Sc, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, In, Ti, Sn, Nb, Ta, Mo, and W and mixtures thereof. (Para. [0040]).

The difference, between claims 10 & 15 and Badding, is that Badding doesn't speak directly to the varied thickness of the electrolyte.

Heifinstine teaches varying the thickness of the electrolyte sheet by at least 1% of the sheet plane through a surface indentation pattern (Para. [0008]).

The motivation to vary the thickness of the electrolyte sheet is to reduce the thermal stress to the sheet that arises during the operation of the fuel cell.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Badding with the varying thickness of the electrolyte as taught by Heifinstine, to decrease the thermal strain incurred by the electrolyte during fuel cell operation.


**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Walker whose telephone number is 571-272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KDW

  
Gregg Cantelmo  
Primary Examiner  
A.U. 1745